2006 Code Update Training

Virginia U.S.B.C.

Transitioning from the 2003 International **Building** Code to the 2006 International **Building** Code

Presented by

Chesterfield County

Code Book Change Formatting

Code text code text

Deletion

Change

Chapter 2: Definitions

USBC Addition:

■ Canopy: A structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration and may be structurally independent or supported by attachment to a building on one end by not less than one stanchion on the outer end.

Example of a canopy

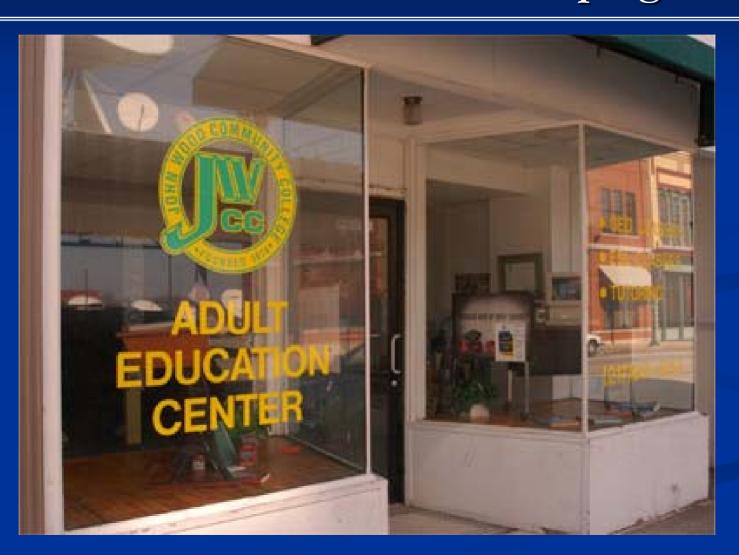




304.1: Business Group B

■To the occupancy description list, add "Training and skill development not within a school or academic program," i.e.; trade schools.

Example of "Training and skill development not within a school or academic program."



310.1, 310.2: Congregate-Living Facilities

- Adds definition of congregate living facility
- Establishes R-3 occupancy classification for 16 or fewer occupants.

Congregate living facility defined:

A building or part thereof that contains sleeping units where residents share bathroom and/or kitchen facilities.

Example of congregate living facility (16 or fewer occupants):



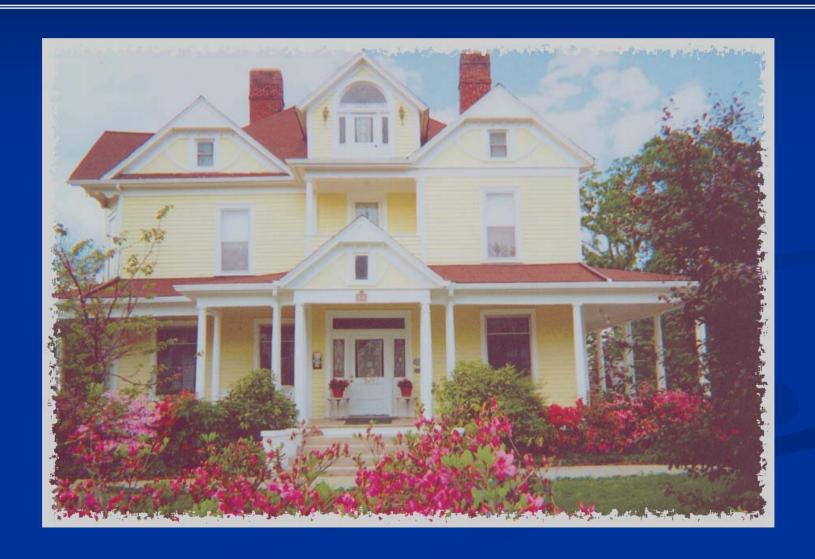
310.1: Bed and Breakfast (USBC Amendment)

Adds two exceptions to the R-1 occupancy classification to include transient boarding facilities such as a "Bed and Breakfast".

310.1: Bed and Breakfast (USBC Amendment - continued)

- 1. Non-proprietor occupied, maximum
 3 stories, maximum 10 occupants, may
 be R-3 or R-5, must have smoke alarms.
- 2. Proprietor occupied, maximum 3 stories, maximum 5 guest room sleeping units, may be R-3 or R-5, must have smoke alarms.

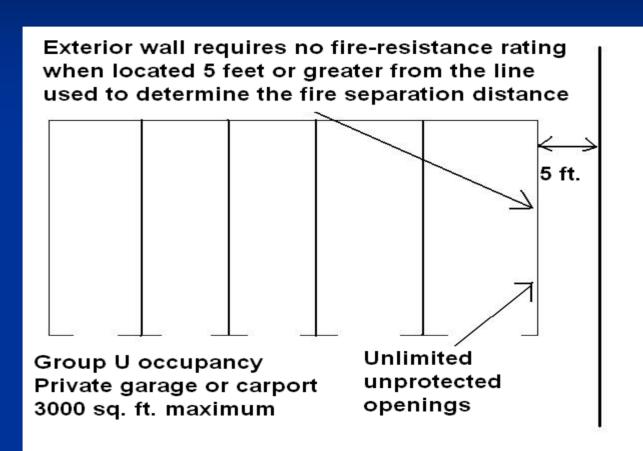
Example of a "Bed and Breakfast":



406.1.2: Private garage exterior walls:

Changes fire separation distance to 5 feet for separate Group U occupancy of up to 3,000 sq. ft. private garages.

Example showing no rating to garage exterior wall at 5 ft.



406.1.4: Doors from a private garage to the dwelling:

Door from private garage to a dwelling must be <u>self-closing</u> and <u>self-</u> <u>latching</u>.





407.9: Occupancy Classification I-2 (USBC Addition)

Emergency power shall be provided for medical life support equipment, operating, recovery, intensive care, emergency rooms, fire detection, and alarm systems in any Group I-2 occupancy licensed by the Virginia Department of Health as a hospital, nursing home or hospice

facility.

502.1: Basement & Story Above Grade Plane

This removes the potential for creating a basement by piling dirt up around the perimeter.

2003 permitted 2006 requires the measuring to measurement to be made 'around' level a distance of 6 feet from to determine the perimeter story above grade 6 feet

505.2: Mezzanine Floor Area Increase

Adds an exception allowing the aggregate area of mezzanines to be up to ½ the room size in buildings of type I or II construction with sprinkler system and an emergency voice/alarm communication system.



505.4: Mezzanine openness

Re-writes exception #5 to permit enclosing mezzanines (except H & I) having at least 2 means of egress is sprinklered and located in buildings no more than two stories in height.

505.4: Mezzanine openness

...travel distance requirements still apply.



508: Mixed Use and Occupancy

All requirements for mixed use including incidental and accessory use provisions previously located in Section 302 have been moved to new Section 508.

508.2: Incidental Use Areas

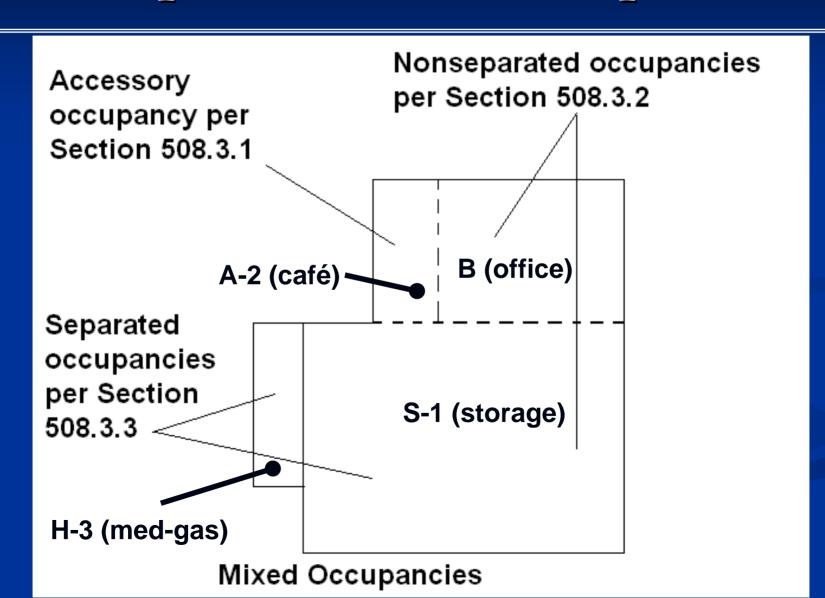
Clarifications:

- May be incidental to an occupancy in one portion of the building in a mixed occupancy condition
- In addition to fire barriers, horizontal assemblies may form part of the 1 hour separation
- If fire suppression protection option is used the fire suppression only needs to be installed in the incidental use room

508.3: Mixed Occupancies

Clarifies: accessory occupancies, separated occupancies, and non-separated occupancies may be applied individually or in combination to address mixed occupancy building design

Example of Mixed Occupancies



508.3.1: Accessory Occupancies

Clarification:

- The accessory occupancy is limited to the story height based on table 503
- The allowable height and area of the accessory use cannot be increased based on open perimeter or sprinkler increases

508.3.1: Accessory Occupancies

- Major change:
 - ■The accessory occupancy must be designated a stand alone occupancy
 - ■The most restrictive fire protection requirements of Chapter 9 apply to the entire building or fire area based on the accessory occupancy

Example of Accessory Occupancies

A-2 Cafeteria

2,000 square foot A-2 Accessory Use in single 20,000 square foot fire area **B** Office Space

20,000 square foot building

Fire area containing A-2 = 20,000 square feet. Therefore, per 903.2.1.2, <u>Sprinkler entire building.</u>

Separated mixed use Table 508.3.3

- Revised to include the 1 hour rating reduction for sprinkler protection as a new table column
- Changed fire barrier separation ideology from separation of all occupancy groups to separation of dissimilar risks

Separate dissimilar risk ideology 508.3.3

- Occupancies of similar risk are not required to be separated with fire barriers
- Differences in fuel loading between similar risk occupancies are controlled or balanced with the use of the allowable area ratio limit of one (1) between occupancies
- Protection of dissimilar risks between occupancies is controlled by the allowable area ratio and the use of fire barriers

Separate dissimilar risk ideology 508.3.3 continued

- Eamples of similar risks:
 - Ordinary/moderate hazard groups: B, F-1, S-1, M
 - People intensive: A1, A2, A3, A4, A5, E

Separate dissimilar risk ideology 508.3.3 continued

- No fire barrier required between B and F1, or A3 and E.
- However, to protect dissimilar risks, a fire barrier is required between B and E, or F1 and E.

Ratio of fuel loading ideology 508.3.3 continued

- Similar risks example for ordinary/ moderate hazard groups B, S-1, M and F-1:
 - Fuel loading viewed as a function of allowable area (using 5B construction):

B=9000sf, S-1=9000sf, M=9000sf, F-1=8500sf; B, S-1 and M are all the same, F-1 is 500sf lower

506.4.1: Clarifies maximum allowed area for separated occupancies in multi-story buildings

- Ratio of actual to allowed area per occupancy shall not exceed 2 for a 2-story building or 3 for a 3-story or taller building.
 - ■Each individual story is still limited to a ratio of one (1) per Section 508.3.3.2.

EXAMPLE

I-2 .5	B .5
.5	.5
.5	.5

$$=1 = O.K.$$

I-2	B .5
.5	.3
.5	.5
.5	.5
.5	.5

$$=1 = 0.K.$$

$$=1 = O.K.$$

$$=1 = O.K.$$

$$=1 = 0.K.$$

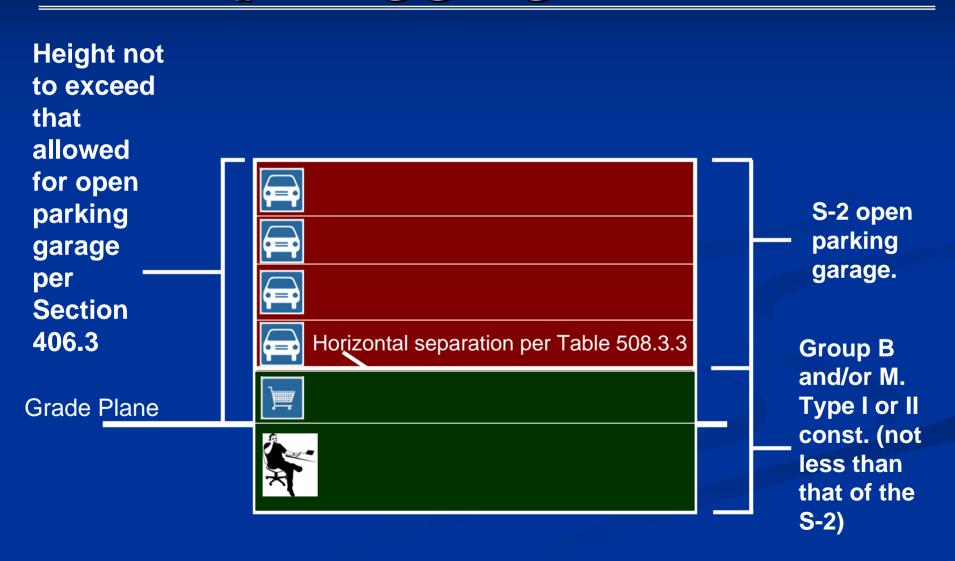
Total = 3 = 0.K.

Total = 4 = NOT O.K.

509.8: Group B or M with Group S-2 open parking garage above

- This new special provision provides an alternative method of regulating Group B or M occupancies located below an open parking structure.
- Allows a Group B or M occupancy under an S-2 open parking garage to be considered as a separate and distinct building.

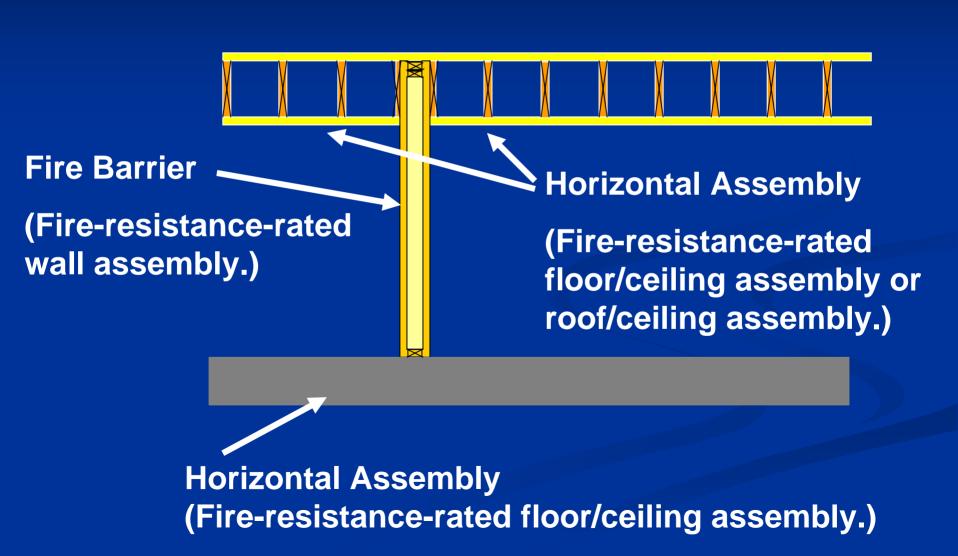
Group B and M uses below an open parking garage above



702.1: Definitions

- The definition of Fire Barrier is limited to walls and no longer includes a horizontal assembly.
- A new definition for Horizontal Assembly has been added.

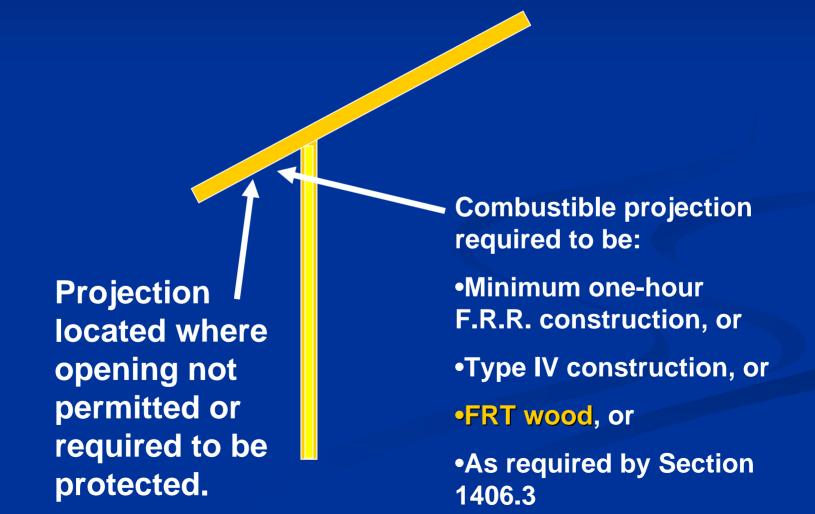
Fire Barrier / Horizontal Assembly



704.2.3: Combustible Projections

Combustible projections are <u>now</u> <u>permitted to be constructed of fire-</u> <u>retardant-treated wood</u>.

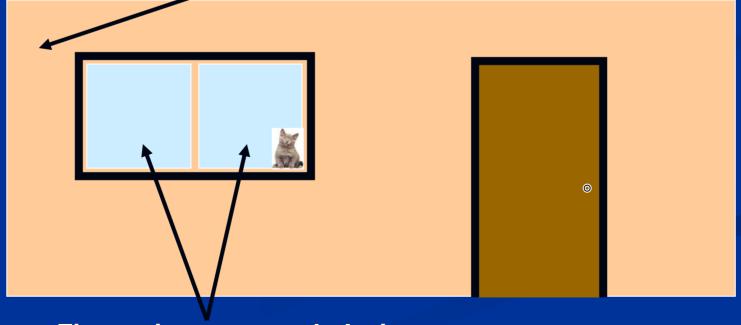
704.2.3: Combustible Projections



706.2.1: Fire-Resistance-Rated Glazing

Fire-resistance-rated glazing is permitted to be used as a wall when tested according to ASTM E119.

Fire Barrier Wall



Fire-resistance-rated glazing

712.5: Smoke barrier penetrations 713.6: Smoke barrier joint systems

- 712.5 is a new section requiring penetrations in smoke barriers to be tested for air leakage per UL 1479.
- 713.6 is a new section requiring fireresistant joint systems in smoke barriers to be tested for air leakage per UL 2079.

713.4: Sealing of Intersection at Exterior Curtain Wall and Floor

A new standard, ASTM E 2307, is added to provide specification of criteria and methods used to determine the fire resistance rating of perimeter fire-barrier systems.

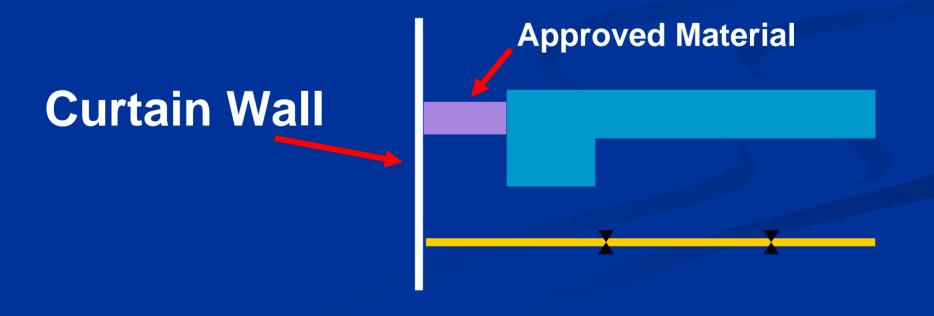


Table 715.4: Fire-protection ratings of fire door assemblies

- Establishes 1/3 hour as the minimum required rating for a fire door (or shutter) located in a 1/2 hour rated fire partition.
- Establishes 1/3 hour as the minimum required rating for a fire door located in a 1 hour rated smoke barrier.

715.4.6.3.1: Labeling and identification of fire-rated glazing in fire doors

Fire-rated glazing in fire doors must be labeled as follows:

715.4.6.3.1: Labeling and identification of fire-rated glazing in fire doors

- "D" = rated as a fire door
- "H" = meets hose stream test
- "NH" = does not meet hose stream requirements
- "T" = meets temperature requirements
- "NT" = does not meet temperature requirements
- "XXX" = fire-protection rating in minutes

Example: D-H060



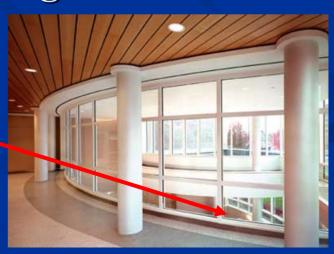
715.4.7.3: Smoke-activated doors

- Added to the list of doors required to be closed by detection of smoke are doors in:
 - **■** shaft enclosures
 - refuse & laundry chutes (including access & termination rooms)
 - walls for compartmentation of underground buildings
 - elevator lobbies of underground buildings
 - **■** smoke partitions.

715.5.8.1: Labeling and identification of fire-rated glazing in fire windows

- The label for fire-rated glazing used in fire windows must have a <u>two-part</u> identifier, specifying the properties of the glazing.
- "OH" = meets both fire-resistance and hose stream test requirements
- "XXX" = fire-protection rating in minutes

Example: OH-045



717.3.1: Draftstopping material

- Approved draftstopping material include:
 - .5 inch gypsum board
 - .375 inch wood structural panels
 - .375 inch particle board
 - 1 inch nominal lumber
 - **■** Cement fiberboard
 - Batts or blankets of mineral wool or glass fiber
 - or other approved materials adequately supported.

IBC Section 903.2.1.2 Automatic Fire Suppression Systems

- USBC Change: Maintains the occupant load threshold at 100 in Use Group A-2 nightclubs.
 - Increases threshold for other A-2 occupancies to 300.

A night club occupancy includes all of the following:

- Provides exhibition, performance or other forms of entertainment
- Serves alcoholic beverages
- Provides music and space for dancing

903.4.2: Sprinkler Alarms (USBC)

For R-2 occupancies of 16 or more dwelling units, or over two stories above or one story below the level of exit discharge, a manual fire alarm box at an approved location shall

be provided.

913: In-Building Emergency Communications Coverage (USBC Addition)

- New section sets out requirements for inbuilding emergency communications
 - Limited exceptions
 - Requires dedicated infrastructure
 - Uses radiating cable systems
 - Locality responsible for additional equipment
 - Must be inspected prior to concealment
 - Emergency public safety personnel may conduct field tests

902: Definition of Emergency Communication Equipment (USBC Addition)

Emergency communication equipment includes, but is not limited to, two-way radio communications, signal booster, bi-directional amplifiers, radiating cable systems or internal multiple antenna, or a combination of the foregoing.

902: Definition of Emergency Public Safety Personnel (USBC Addition)

Emergency public safety personnel includes firefighters, emergency medical personnel and lawenforcement officers called upon to provide emergency assistance.

IBC Section 1002.1 Revised Means of Egress Definition

- Accessible Means of Egress
 - Clarifies that the accessible means of egress is required only from points within a building that are required to be accessible

IBC Section 1002.1 Added Means of Egress Definition

Aisle:

"An exit access component that defines and provides a path of egress travel."

IBC Section 1002.1 Added Means of Egress Definition

Merchandise pad (as used in 1014.4.2):

"...an area for display of merchandise surrounded by aisles, permanent fixtures or walls."

IBC Section 1003.2 General Means of Egress

Increased the minimum ceiling height to 7'-6" (was 7'-0")

IBC Section 1004. Occupant Load

- Table 1004.1.1 changed Occupancy to Function of Space.
- This clarifies the occupant load of a space is calculated based on the function of the space, not the occupancy group.

IBC Section 1004. Occupant Load

Table 1004.1.1: Day Care Centers added to table, utilizing a net 35 square feet per person.

IBC Section 1004. Occupant Load

1004.2: Increased the area per person from 5 to 7 square feet for calculating maximum occupant load.

IBC Section 1004. Occupant Load (USBC Amendment)

1004.3: Rooms and spaces of assembly occupancies with an occupant load of 50 or more, must have the occupant load posted.



IBC Section 1007: Accessible Means of Egress (USBC Amendment)

■ 1007.3: Exit Stairways. Changed exception #3 retaining the language from the 2003 IBC that does not require an area of refuge at stairways in buildings sprinklered per NFPA 13 or 13R. (No change.)

IBC Section 1007: Accessible Means of Egress (USBC Amendment)

■ 1007.4 Elevators. Added an exception #2 retaining the exception from the 2003 IBC that elevators are not required to be accessed from an area of refuge or horizontal exit in buildings or facilities that are sprinklered per NFPA 13 or 13R. (No change.)

IBC Section 1007: Accessible Means of Egress (USBC Amendment)

■ 1007.6.2 Areas of refuge. Added exception #2 retaining the exception from the 2003 IBC that areas of refuge are not required to be separated by smoke barriers where the building is sprinklered per NFPA 13 or 13R. (No change.)

IBC Section 1008. Doors, Gates, and Turnstiles

 1008.1.9 Panic Hardware now required at 50 or more occupants in Use Groups A and E.

IBC Section 1008. Doors, Gates, and Turnstiles

• Panic hardware required on doors serving electrical rooms with equipment rated 1,200 amperes or more and over 6' wide.

IBC Section 1008.1.8.7 Stairway Doors

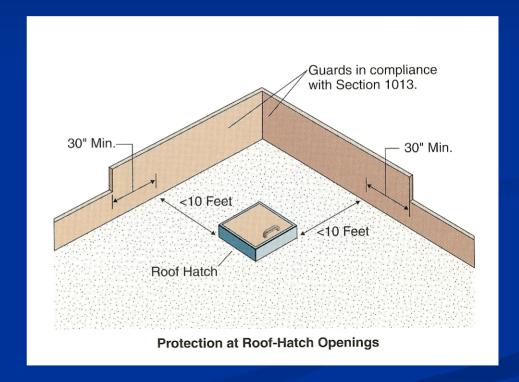
Exception 3: In stairways serving not more than four stories, doors are permitted to be locked from the side opposite the egress side, provided they are openable from the egress side and capable of being unlocked simultaneously without unlatching upon a signal from the fire command center, if present, or a signal by emergency personnel from a single location inside the main entrance to the building.

IBC Section 1009. Stairways

• 1009.11.2 and 1013.6: Where a hatch is permitted as the means to access the roof from a required stairway to the roof, and the hatch opening is located within 10 feet of the roof edge, guards shall be installed at the hatch opening or at the roof edge.

IBC Section 1009. Stairways





IBC Section 1009.5.2 Outdoor Conditions

Deleted the requirement to prevent snow accumulation at outdoor stairways

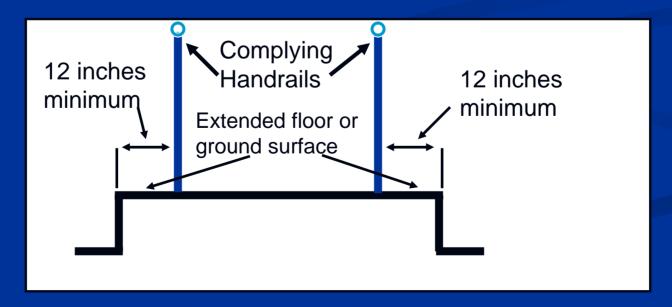
IBC Section 1009.12 Ships ladders (USBC Addition)

1009.12 Ships ladders are permitted as an element of a means of egress for observation or control rooms not more than 250 square feet in area and serving not more than 3 occupants, and for access to unoccupied

roofs.

IBC Section 1010. Ramps

• 1010.9.2 As an alternative to a curb at the edge of a ramp, the floor or ground surface of a ramp or landing is permitted to extend a minimum of 12 inches beyond the inside face of the handrail.



IBC Section 1012. Handrails

• 1012. Handrail requirements are now in their own section rather than part of Stairways.

IBC Section 1014. Exit Access

• 1014.3 Exception added that permits the common path of egress travel to be increased from 75 feet to 125 feet in R-2 occupancies sprinklered in accordance with NFPA-13. (Cannot use 13R and does not supersede single exit provisions in Table 1019.2)

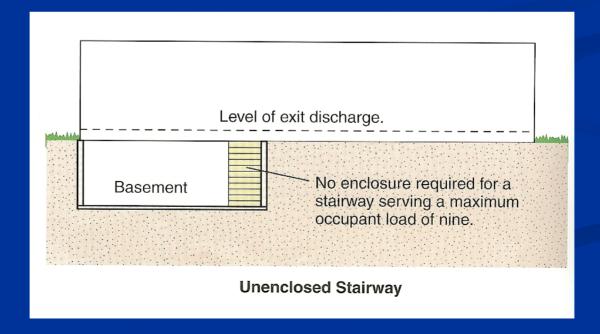
IBC Section 1014. Exit Access

• 1014.4.2 For M occupancy, the minimum aisle accessway width shall be 30 inches for aisles not required to be accessible.

Group M occupancy Merchandise pad Aisle 30" minimum

IBC Section 1020. Vertical Exit Enclosures

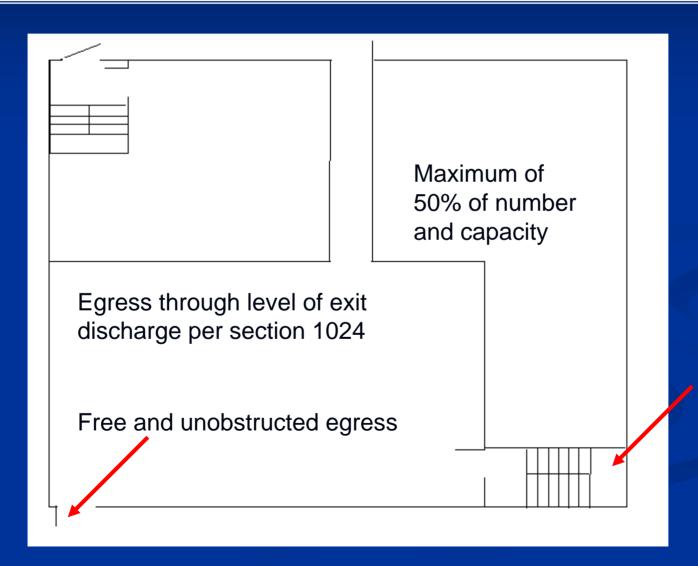
 1020.1 Revised exceptions to allow stairs connecting basement and first level to be unenclosed as long as basement occupant load is less than 10.



IBC Section 1020. Vertical Exit Enclosures

1020.1.7.1. Exception 3 clarifies that a smokeproof enclosure or pressurized stairway is permitted to egress through areas on the level of discharge or vestibules as already permitted by section 1024 for exit discharge.

IBC Section 1020. Vertical Exit Enclosures



Smokeproof enclosure

IBC Section 1105. Accessible Entrances

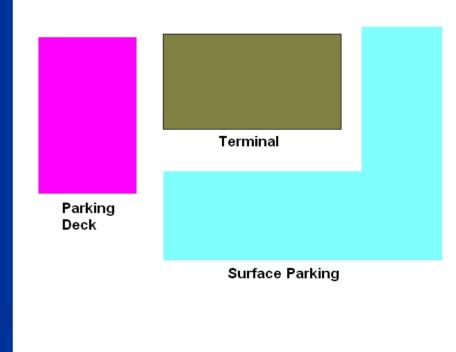
• 1105.1 To coordinate with ADA Guidelines, the number of accessible entrances has been increased from 50% to 60% for public entrances.

# of Public	# of Required Accessible Public	
Entrances	Entrances	
1	1	
2	2	
3	2	
4	3	

IBC Section 1106. Accessible Parking and Loading

 1106.1 Number of accessible parking spaces shall be calculated separately for each parking facility.

	Total Spaces	Van Spaces
Parking Garage	9	2
Surface Parking	<u>6</u>	<u>1</u>
	15	3

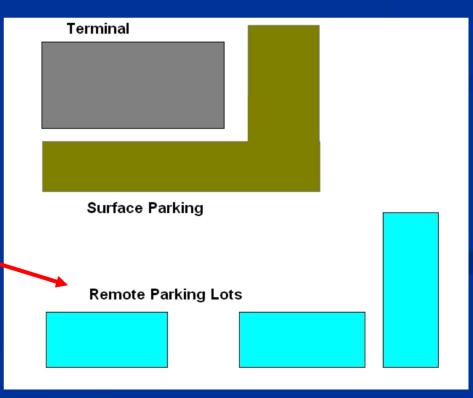


IBC Section 1106. Accessible Parking and Loading

1106.6 New exception for remote parking areas. Required spaces may be relocated to a different parking facility as long as they provide equivalent

or greater accessibility.

Spaces permitted to be relocated to a different facility



IBC Section 1108. Special Occupancies

• 1108.2 1108.2.2.4 1108.2.4.
Accessible seating requirements established for Assembly seating areas, team or player seating, and designated aisle seats.

IBC Section 1109. Other Features and Facilities

- 1109.2 Deleted exception #4 for child size fixtures, since requirements are now in 2003 ANSI A117.
- 1109.2 Changed exception #3 from 5% to 50% of toilet rooms to be accessible when toilet rooms are clustered.

IBC Section 1109. Other Features and Facilities

• 1109.5 Requires accessible drinking fountains both for those who use a wheelchair and for standing persons.



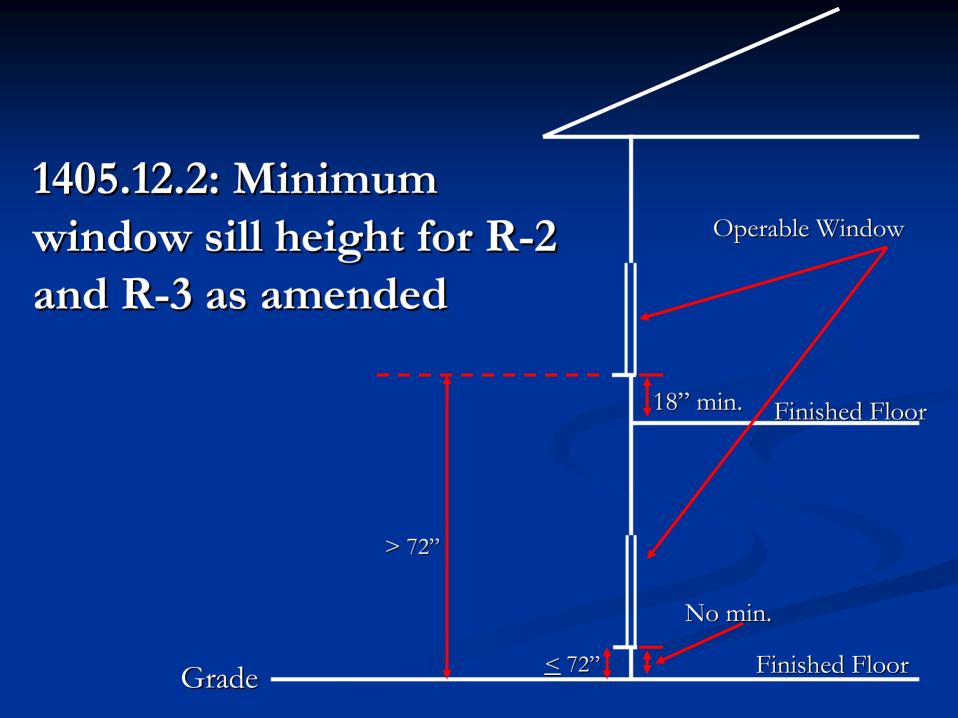
IBC Section 1109. Other Features and Facilities

Exception: A single drinking fountain that complies with the requirements for people who use a wheelchair and standing persons shall be permitted.



1405.12.2: Minimum window sill height

As amended by the USBC, for R-2 and R-3, where a window sill is located more than 72 inches above the grade below, the minimum sill height shall be 18 inches above the floor. Exceptions allow fixed glazing or window guards below the 18 inch level.



1504.8: Gravel and Stone (Roof covering)

- Added new Table 1504.8 that restricts the use of gravel ballasted roofs based on mean roof height and exposure category.
 - Most effect will be to exposure C buildings of 35 or more feet in height.

Chapter 16

The net effect of chapter 16 changes is to move a substantial portion of the structural engineering process from the IBC code text to ASCE-7-05, Minimum Design Loads for Buildings and Other Structures.

■ This reduced the chapter by 28 pages.

1609.5.2 Roof Coverings

New uplift requirements for asphalt shingles.

- 1. Tested per ASTM D 6381
- 2. May be designed for uplift per UL 2390



1612.1 Elevation of Manufactured Homes (USBC Amendment)

Within flood hazard areas without a history of damage to manufactured homes, revised required elevation of home such that its chassis is supported by piers at least 36" above adjacent grade.

1703.1 (USBC Amendment)

Approved Agency for Special Inspections

Agencies responsible for performing special inspections shall satisfy requirements of ASTM E329 or an acceptable alternative.

1703.1.1 (USBC Amendment) Independence of Special Inspector

Clarified that the Special Inspector cannot be directly employed by the contractor.

1703.1.3 (USBC Amendment) Personnel used for Special Inspections

- Authorizes the Building Official to request documentation of qualifications of both agencies and individuals performing tests and special inspections
- Building Official may also prescribe frequency of updating and nature of documentation

1704.1 (USBC Amendment) Special Inspections - General

Registered Design Professional in Responsible Charge Special Inspector Special Inspector **Special Inspector** Special Special Special Inspections Inspections Inspections (Field Staff) (Field Staff) (Field Staff)

1705.2 Revised Special Inspection Requirements

On the Statement of Special Inspections, there is no longer a requirement to include the firms, agencies, and personnel that will perform these inspections.

TABLES 1704.7, 1704.8, & 1704.9 Required Verification & Inspection of Soils & Foundations

Created new tables and expanded requirements for earthwork, pile foundations, and pier foundations.



1704.11: Mastic and Intumescent Fire-resistant Coatings

Added a special inspection for these materials when protecting structural elements and decks.

(According to AWCI 12-B)



1805.2.1 Frost Protection

Expanded exemption for buildings of light-frame construction not exceeding 600 square feet. Remains 400 square feet for other than light frame. This permits a 12 inch deep

footing.



TABLES 1805.5(1,2,3,4,&5) Prescriptive Foundation Wall Tables

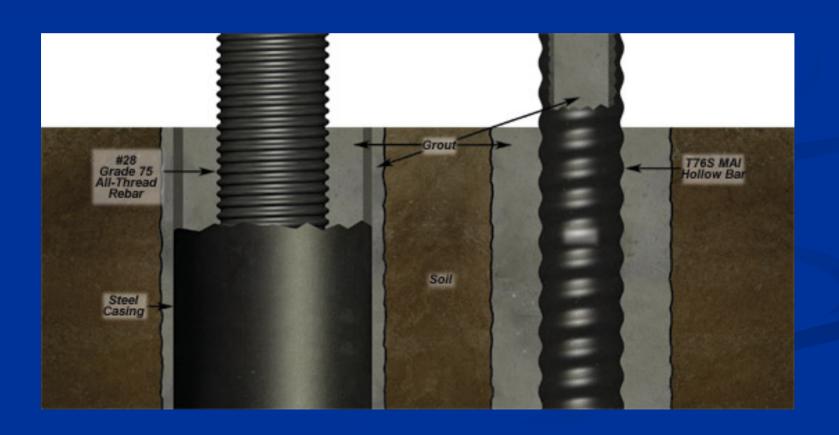
Reorganized and expanded tables to include separate prescriptive foundation requirements for masonry and concrete foundation walls.

1805.5.2 Foundation Wall Materials

Added requirements from the referenced standards for foundation material into the code.

1810.8: Micropiles

Added requirement for micropiles.



Concrete: 1901 through 1907

- Substantial portions of these sections were deleted and replaced with applicable references to ACI 318.
- The net effect is minimal, since requirements previously stated in the code are found in the referenced standard.

Chapter 21, Masonry: AAC Concrete

Provisions added for Autoclaved Aerated Concrete and Masonry. (Limited to seismic design category A buildings when used as an element in the seismic force resisting system.)

SECTION 2112 Masonry Heaters

Requirements have been added for the design and construction of masonry heaters.



2206.2 Steel Joist Design

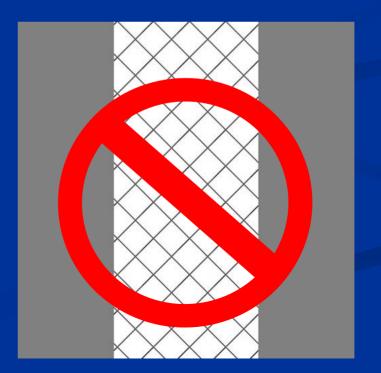
- Additional requirements for load and joist designation information to be shown on the Design Drawings
- A Certificate of Compliance is required to be submitted by the fabricator (required special inspection)

2303.4.1 Wood Truss Design

Provides more specific design requirements to the truss manufacturer relative to permanent truss bracing.

2406.1 Human Impact Loads on Safety Glazing

Wired glass is no longer acceptable in areas requiring safety glazing.



2509.2: Base for tile

Water-resistant gypsum backer board (green board) is no longer approved for use in tub and shower spaces. Tub and shower spaces now require cement, fiber-cement, or glass mat gypsum backer.

3002.4: Elevator Car to Accommodate Ambulance Stretcher

Increases size of elevator car to accommodate a 24 X 84 inch stretcher.

USBC requires star of life symbol to be located on the designated and alternate floor landings.



3006.7: Machine-room-less Elevators

■ USBC added significant new provisions to address the new technology of machine-room-less elevators.

3104.3 Construction of Pedestrian Walkways and Tunnels

FRT wood may be used in roof construction of pedestrian walkways connected to Type I or Type II buildings



3109.3 Public Swimming Pools (USBC Amendment)

Adds requirement that pools be designed and constructed per ANSI/NSPI-1 or ANSI/NSPI-2, addressing circulation and entrapment requirements.

3109.4.1.8 Swimming Pool Barrier Heights and Clearances

Modification of Height of Deactivation Switch on dwelling walls acting as a barrier in Accessible (Type A or Type B) units – minimum 48 inches, maximum 54 inches.

3109.5 Swimming Pool Entrapment Avoidance

Expansion of system requirements for entrapment avoidance in pools

- 1. Suction Fittings
- 2. Vacuum Relief System
- 3. Suction Outlets
- 4. Pool Cleaner Fittings

3402.1 Existing Structures Definitions

- "Primary Function" definition added –that clearly defines what areas of the building are primary function areas.
- Used for determining accessibility requirements in existing buildings

3409.6 Alterations Accessibility

Addition of a third exception to accessibility requirements for alterations in an individually owned (Condominium) Group R-2 Type A dwelling unit - must only meet provisions for Type B when being altered.

3411.15 Posting of Occupant Load (USBC Amendment)

- Revises requirement for posting the occupancy of Assembly rooms or spaces to only those with an occupancy load of 50 or more
- Aligns existing buildings with 2006 IBC requirements for new construction

Chapter 35 - Referenced Standards

■ USBC amendment references 2007 editions of NFPA-13, 13R, 13D, 14 and 72